

Notes on the Genus *Epipsestis*, with Descriptions of Three New Species from Nepal (Lepidoptera: Thyatiridae)¹⁾

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The genus *Epipsestis* MATSUMURA, 1921, has been represented by the following three species in Japan: *E. ornata* (LEECH, [1889]), *E. nikkoensis* (MATSUMURA, 1921) and *E. perornata* INOUE, 1972. As the result of my detailed examination of about 400 Nepalese specimens of autumnal thyatirids captured by Mr. M. OWADA, the National Science Museum (Nat. Hist.), Tokyo, during the 1979 expedition to Nepal-Himalaya, I am going to place in *Epipsestis* some Nepalese species formerly assigned to the genus *Polyploca* HÜBNER, 1816, enlarging the category of the genus. However, *Epipsestis* will eventually be restricted to *E. ornata* (LEECH) by the future phylogenetic study. In this paper, ten species of *Epipsestis* from Japan and Nepal, including three new species from Nepal, will be enumerated, and a re-definition of this genus founded on them will be shown.

Genus *Epipsestis* MATSUMURA, 1921

Epipsestis MATSUMURA, 1921, Thous. Ins. Japan, add., 4: 858. Type-species: *Polyploca ornata* LEECH, [1889].

Neopsestis MATSUMURA, 1933, Ins. matsum., 7: 195. Type-species: *Polyploca nikkoensis* MATSUMURA, 1921.

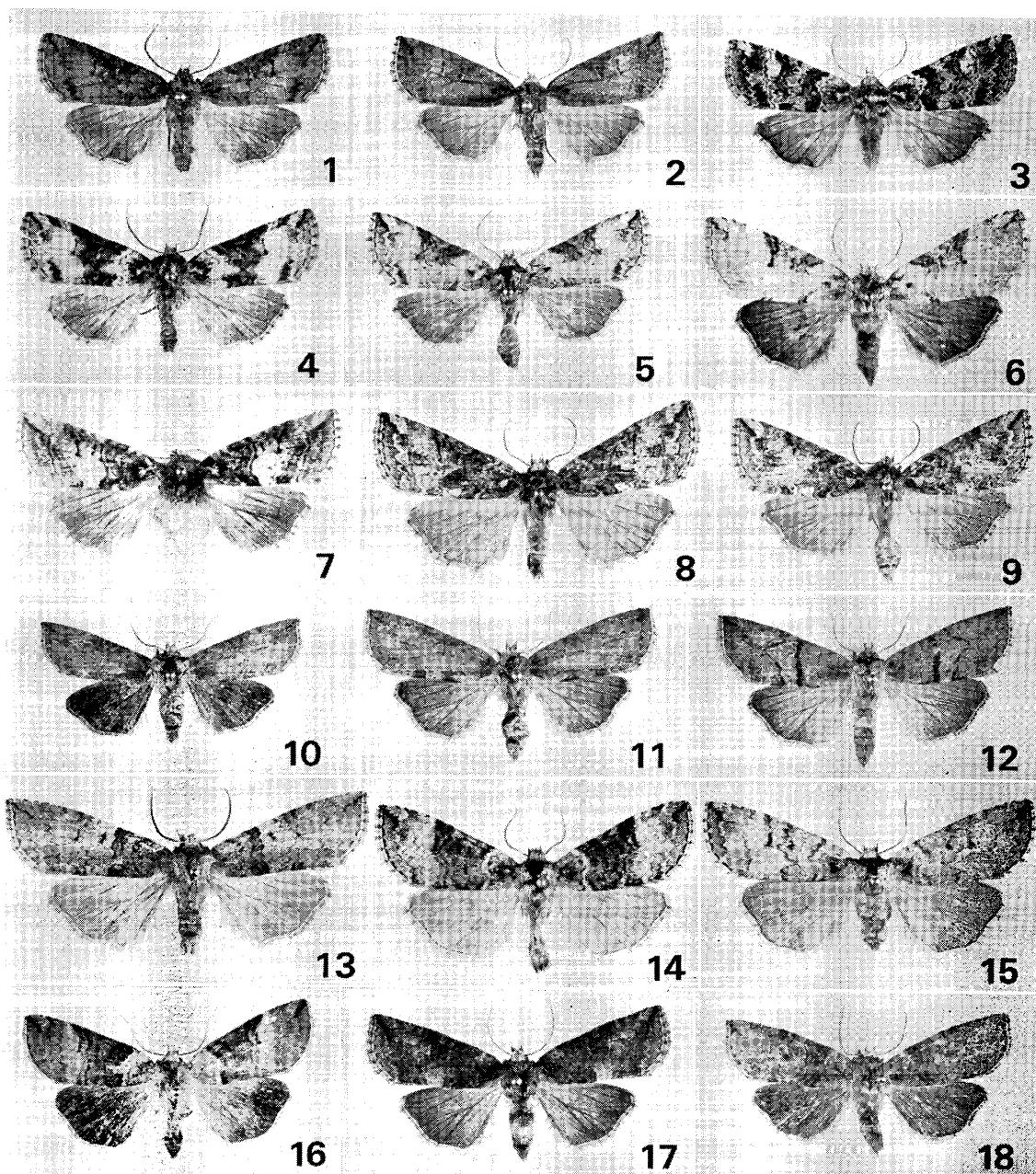
Sugiploca MATSUMURA, 1933, Ins. matsum., 7: 198, 199. Type-species: *Sugiploca sugitanii* MATSUMURA, 1933 (a junior subjective synonym of *Polyploca ornata* LEECH, [1889]).

Consisting of small to medium sized moths having the expanse of about 25–40 mm.

Antennae lamellate, slightly thicker in male; compound eyes hairy, lashed with long hairs; second segment of palpus fringed below with long hairy scales, third one smooth; proboscis well developed; head with scaly tufts on frons and vertex between bases of antennae; thorax smooth (tegulae anteriorly produced when resting in natural condition); abdomen smooth in general, with the exception in *E. nikkoensis* (MATSUMURA) which has a dorsal crest on the third segment. Forewing narrow, with raised-scale tufts at base, in cell and at discocellulars.

Male genitalia: Uncus and socius well developed, the latter varying from a simple tubular form to differently modified ones; tegumen large and broad, strongly bent ventrally in general, with its posterior margin folded inwards or with posterior sclerite running parallel to tegumen from its shoulder and connected with it by membrane; anellus generally well developed, variously ornamented with minute spines,

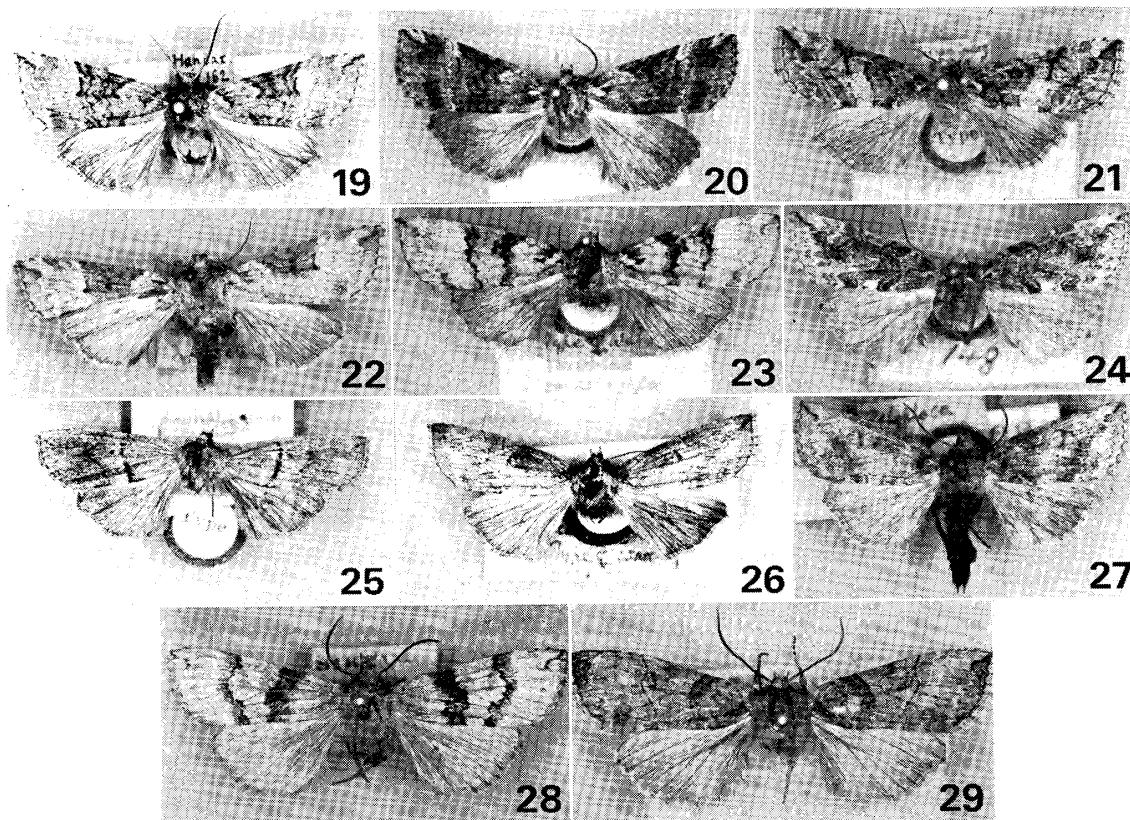
1) This study is supported by the Grant-in-aid for Scientific Research No. 404101 from the Ministry of Education, Japan.



Figs. 1–18. *Epipsestis* spp. from Nepal. 1–6. *E. dubia* (WARREN); 7–9. *E. albidisca* (WARREN); 10–12. *E. bilineata* (WARREN); 13. *E. longipennis* sp. nov., holotype; 14. *E. medialis* sp. nov., holotype; 15. ditto, paratype; 16. *E. mediofusca* sp. nov., holotype; 17. *E. nikkoensis* (MATSUMURA); 18. *E. renalis* (MOORE).

scobinates, or long spines; vinculum relatively short and saccus less developed, wide U-shaped in caudal view; valva membranous, simple, with both costa and sacculus well sclerotized; dorso-caudal margin of sacculus raised, modified and ornamented with minute spines, dents, and scobinates; aedeagus usually straight, coecum long, with a sclerotized caudal process; vesica bearing a batch of minute spinous cornuti in regular rows.

Female genitalia: Papillae anales generally bearing trigonally sclerotized regions



Figs. 19–29. Type-specimens of *Epipsestis* spp. preserved in the British Museum (Natural History). 19. *Polyploca dubia* WARREN; 20. *Polyploca nigrifasciata* WARREN; 22. *Polyploca nigrifasciata*, ab. *semifascia* WARREN; 23. *Polyploca nigrifasciata*, ab. *nigrilineata* WARREN; 21. *Polyploca albidisca* WARREN; 24. *Polyploca polychromata* HAMPSON; 27. *Polyploca polychromata*, ab. *ochracea* WARREN (manuscript name); 25. *Polyploca bilineata* WARREN; 26. *Polyploca acutangula* WARREN; 28. *Polyploca bifasciata* HAMPSON; 29. *Polyploca griseata* WARREN.

between them, which are densely clothed with minute spines; 8th sternite usually degenerated, ventral membrane of this segment clothed with minute spines or hairs; its dorsum modified, in most species its caudal wall invaginated anteriorly; ostium bursae weakly sclerotized, protected by intersegmental membrane between 8th and 7th segments; lamella antevaginalis pubescent in general, with a sclerotized ridge; ductus bursae long, with a knobbed tube just before ostium bursae, from which ductus seminalis is borne; corpus bursae minutely granulated over surface, signum usually of a small sclerotized area with minute dents or granules.

Early stage: Known in the three Japanese species, although recorded in two species only, viz. *E. ornata* (LEECH) and the other, perhaps *E. nikkoensis* (MATSUMURA) (NAKAJIMA, 1970, *Japan Heterocerists' J.*, (61): 8–10; NAKAMURA, 1970, *ibid.*, (63): 42–43; briefly discussed in YOSHIMOTO, 1976, *Tinea*, **10**: 67–70). Larva feeds on *Quercus* such as *Q. acutissima* CARR., *Q. serrata* THUNB. and *Q. mongolica* FISCH. var. *grosseserrata* REHD. et WILS.

Remarks: The genus *Epipsestis* as defined here may be splittable and the use of the name will finally be restricted to *E. ornata* as in MATSUMURA's strict sense in

1933, for *ornata* has very peculiar female genitalia among the members of the genus. Then, for the rest, only the available name is *Neopsestis* MATSUMURA, but I think it necessary to erect a new genus for *E. perornata* INOUE and its allies, and one more new genus may be needed for *E. renalis* (MOORE).

Epipsestis ornata (LEECH, 1888)

Polyploca ornata LEECH, [1889], Proc. zool. Soc. Lond., **1888**: 653, pl. 32, fig. 10; DALLA TORRE, 1921, in JUNK, Lep. Cat., (25): 30.

Polyploca ornata var. *unicolor* LEECH, [1889], Proc. zool. Soc. Lond., **1888**: 653, pl. 32, fig. 11.

Polyploca ornata var. *concolor*: DALLA TORRE, 1921, in JUNK, Lep. Cat., (25): 30 (err. typogr.)

Palimpsestis ornata: WARREN, 1912, in SEITZ, Gross-Schmett. Erde, **2**: 327, pl. 49, line g.

Palimpsestis ornata ab. *unicolor*: WARREN, 1912, in Seitz, Gross-Schmett. Erde, **2**: 327, pl. 49, line g.

Cymatophora ornata: HOULBERT, 1921, in OBERTHÜR, Études Lépid. comp., **18** (2): 171, fig. 45.

Cymatophora ornata var. *unicolor*: HOULBERT, 1921, in OBERTHÜR, Études Lépid. comp., **18**(2): 172, fig. 45.

Epipsestis ornata var. *unicolor*: MATSUMURA, 1921, Thous. Ins. Japan, add., **4**: 857, pl. 61, fig. 20.

Epipsestis ornata: MATSUMURA, 1931, 6000 illust. Ins. Japan: 669, no. 298.

Epipsestis ornata f. *unicolor*: MATSUMURA, 1931, 6000 illust. Ins. Japan: 669, no. 298.

Sugiploca sugitanii MATSUMURA, 1933, Ins. matsum., **7**: 198, pl. 4, figs. 11, 21.

Length of forewing: 15–18 mm. (*Expanse*: 32–38 mm.)

Male genitalia (Fig. 30): Uncus simple, curved at basal one-third, its dorsum concave at base; socius of a straightened tubular form with nearly equal length to uncus, its base somewhat narrower; tegumen narrow laterally, its dorsum constricted just before connective area with uncus, posterior sclerite fused with dorso-lateral margin of tegumen, then connected with it by membrane and becoming narrower to near base of tegumen; anellus oblong, bifid caudally, with biserrate series of stout spines; valva wide, sacculus well developed and its tip far beyond ventral margin of valva, with a minutely dentate and carinate stout projection at dorso-apical area and with an arched series of denticles on mesal area; aedeagus long, with a stout and disk-like caudal process; vesica with a batch of minute and stout spine-like cornuti.

Female genitalia (Fig. 40): Papillae anales thin and elongated, lacking sclerotized and spinulated region on ventral membrane between them; ventral surface of 8th segment clothed with minute, but relatively longer, hairy spines; its dorsum long, with anterior margin protrudent, deeply concave longitudinally in middle and posterior wall invaginated shallowly; lamella antevaginalis rather wide, not clothed with minute spines, wide U-, or loose W-shaped; ductus bursae ribbed at about two-fifths from ostium bursae; corpus bursae heavily wrinkled, signum large and long, well sclerotized and granulated.

Specimens examined: Japan: —1 ♂, Koshimizu-cho, Shari-gun, Hokkaido, Sept. 11, 1980, S. KAWAHARA leg.; 1 ♂, Fukashiro (600 m), Ohtsuki, Yamanashi Pref., Oct. 22, 1977, H. YOSHIMOTO leg.; 1 ♂, same locality, Oct. 11, 1980, H. YOSHIMOTO leg.; 3 ♂ 1 ♀, Uenohara (250 m), Yamanashi Pref., Oct. 8, 1977, H. YOSHIMOTO leg., Genitalia: HY-Thyat. 50, 51 (♂), 83 (♀); 1 ♂, same locality, Oct. 22, 1977, H. YOSHIMOTO leg., Genitalia: HY-Thyat. 19; 1 ♂, Ohdarumi (350 m), Kanagawa Pref., Oct. 8, 1977, H. YOSHIMOTO leg.

Epipsestis nikkoensis (MATSUMURA, 1921) (Fig. 17)

Polyploca nikkoensis MATSUMURA, 1921, Thous. Ins. Japan, add., 4: 856, pl. 61, fig. 19.

Epipsestis nikkoensis: MATSUMURA, 1931, 6000 illust. Ins. Japan: 668, no. 297; YOSHIMOTO, 1976,

Tinea, 10: 68, figs. 1, 2, 3, 5, 7, 9.

Neopsestis nikkoensis: MATSUMURA, 1933, Ins. matsum., 7: 195, pl. 4, fig. 27.

Epipsestis ornata ab. *nikkoensis*: INOUE, 1956, Boll. Lab. Zool. Portici, 33: 664.

Epipsestis ornata (part.): INOUE, 1972, Bull. Japan ent. Acad., 6: 32, fig. 3, pl. 5, fig. 4 (nec LEECH).

Length of forewing: 13–15 mm. (Expanse: 28–33 mm.)

Male genitalia (Fig. 31): Uncus curved at basal one-third, becoming slightly slenderer there; socius strongly curved inwards, widened before tip and a little shorter than uncus; tegumen bent ventrally, its dorsum shallowly concave at caudal end, with posterior sclerite from shoulder becoming narrower and fused below with lateral side of bottom of anellus, which is trigonal, elongate, bearing a mass of stout spines at middle; valva narrow, sacculus with its dorso-caudal end protruding inwards and minutely dentate; aedeagus with a curved and lobed caudal process; vesica bearing a batch of minute and stout spine-like cornuti.

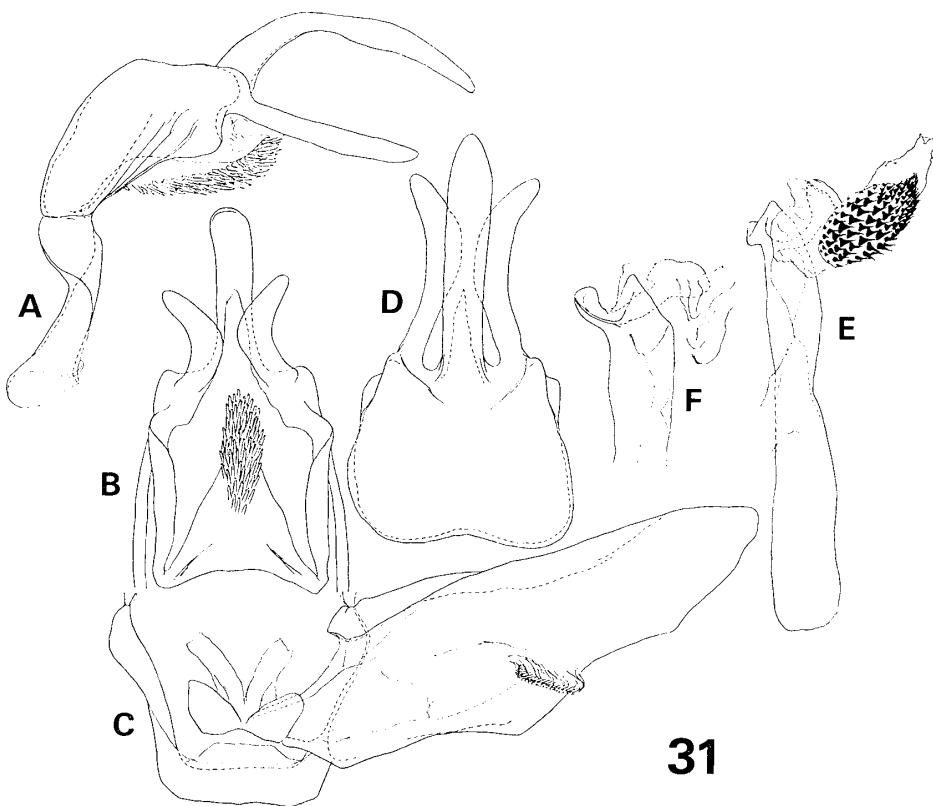
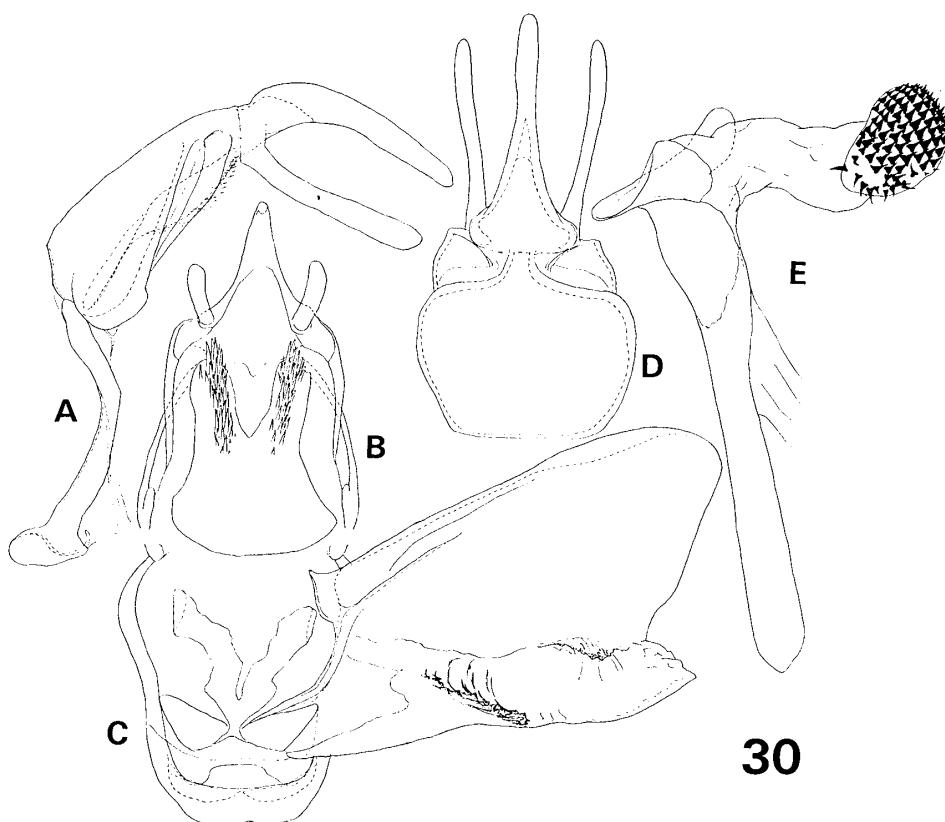
Female genitalia (Fig. 41): Papillae anales small, with trigonal sclerotized regions between them clothed with minute spines; 8th sternite well developed; dorsum of 8th segment narrow, posterior margin shallowly concave; minute spines densely crowding around the center of ventral surface of intersegmental membrane between 8th segment and papillae anales; lamella antevaginalis clothed with minute spines, wide and irregularly ridgy; corpus bursae large, signum pyriform with minute granular dents.

Specimens examined: Japan: —4 ♀, Sanjo (1,000 m), Ushiroyama-rindo, Yamanashi Pref., Oct. 2, 1976, H. YOSHIMOTO leg., Genitalia: HY-Thyat. 30, 85; 1 ♂, Sasago (700 m), Yamanashi Pref., Oct. 8, 1977, H. YOSHIMOTO leg.; 1 ♂ 2 ♀, Uenohara (250 m), Yamanashi Pref., Oct. 22, 1977, H. YOSHIMOTO leg., Genitalia: HY-Thyat. 21 (♂); 1 ♀, Fujino (200 m), Kanagawa Pref., Nov. 5, 1977, H. YOSHIMOTO leg. Nepal: —1 ♀, Chauki (2,700 m), Terhathum, Kosi Zone, Oct. 30, 1979, M. OWADA leg., Genitalia: HY-Thyat. 73.

Distribution: Japan (Honshu) and Nepal (Kosi).

Remarks: It is quite surprising that this species, hitherto known only from Japan, was discovered in East Nepal. The female genitalia and external feature of the Nepalese specimen are entirely identical with those of Japanese specimens.

In the genitalic structure, this species seems to be situated between *E. ornata* (LEECH) and the following six species and partakes of characters from both of them, that is, this species has simple uncus and socii, laterally narrow tegumen with posterior sclerites from shoulder, spine-like stout cornuti of vesica in male and shallowly invaginated caudal wall of 8th dorsum in female as in *ornata*, and otherwise has dorsally convex and ventrally bent tegumen, less developed sacculus in male and normally roundish papillae anales, sclerotized and spinulated regions between papillae anales in female as in the following six species.



Figs. 30–31. Male genitalia of *Episestis* spp. 30. *E. ornata* (LEECH); 31. *E. nikkoensis* (MATSUMURA). (A: lateral view of uncus, tegumen and vinculum, B: ventral view of tegumen, C: caudal view of valva, saccus and juxta, left valva omitted, D: dorsal view of tegumen, E: aedeagus, F: caudal process of aedeagus, or cornuti.)

Epipsestis perornata INOUE, 1972

Epipsestis perornata INOUE, 1972, Bull. Japan ent. Acad., **6**: 32, figs. 5, 6, pl. 5, figs. 5, 6, 7, 8.

Length of forewing: 15–16 mm. (*Expanse:* 32–33 mm.)

Male genitalia (Fig. 32): Uncus stout, with a pair of curved ventral processes; socius with its base broadened, bifurcate with ventral branch rimmed laterally; tegumen large, roundish, with posterior margin folded inwards and protrudent below base of socius; anellus roundish, with its bottom narrowly extending laterally, clothed with minute and stout spines; valva rather narrow, sacculus with its ventral margin gently arched and angulate before caudal end, where it is raised and clothed with minute denticles; aedeagus somewhat bent, with a club-like caudal process gently curved at tip; vesica bearing a batch of minute scale-like spines.

Female genitalia (Fig. 42): Papillae anales large, sclerotized regions between them also large and long, densely clothed with minute spines; ventral membrane of 8th segment weak, finely pubescent, ridgy posteriorly; its dorsum narrow, convex and gently arched posteriorly, with posterior half finely undulated; caudal wall deeply and widely invaginated anteriorly far beyond the anterior margin of dorsum; lamella antevaginalis ridgy, clothed with minute hairy spines; signum oval, bearing minute dents.

Specimens examined: Japan: —1 ♂ 1 ♀, Sanjo (1,000 m), Ushiroyama-rindo, Yamanashi Pref., Oct. 2, 1976, H. YOSHIMOTO leg.; 2 ♂, same locality, Oct. 16, 1976, H. YOSHIMOTO leg., Genitalia: HY-Thyat. 20; 1 ♀, Saiki-rindo (1,500 m), Yanagisawatoge, Enzan, Yamanashi Pref., Oct. 18, 1980, H. YOSHIMOTO leg., Genitalia: HY-Thyat. 84.

Epipsestis dubia (WARREN, 1888), sp. rev. et comb. nov.

(Figs. 1–6, 19, 20, 22, 23)

Polyploca dubia WARREN, 1888, Proc. zool. Soc. Lond., **1888**: 300.

Cymatophora dubia: DALLA TORRE, 1921, in JUNK, Lepid. Cat., (25): 14.

Polyploca nigrifasciata WARREN, 1915, Novit. zool., **22**: 158, syn. nov.

Polyploca nigrifasciata ab. *semifascia* WARREN, 1915, Novit. zool., **22**: 158.

Polyploca nigrifasciata ab. *nigrilineata* WARREN, 1915, Novit. zool., **22**: 158.

Polyploca albidisca (part.): HAMPSON, 1892, Fauna Brit. India, Moths, **1**: 183; GAEDE, 1930, in SEITZ, Gross-Schmett. Erde, **10**: 662 (nec WARREN).

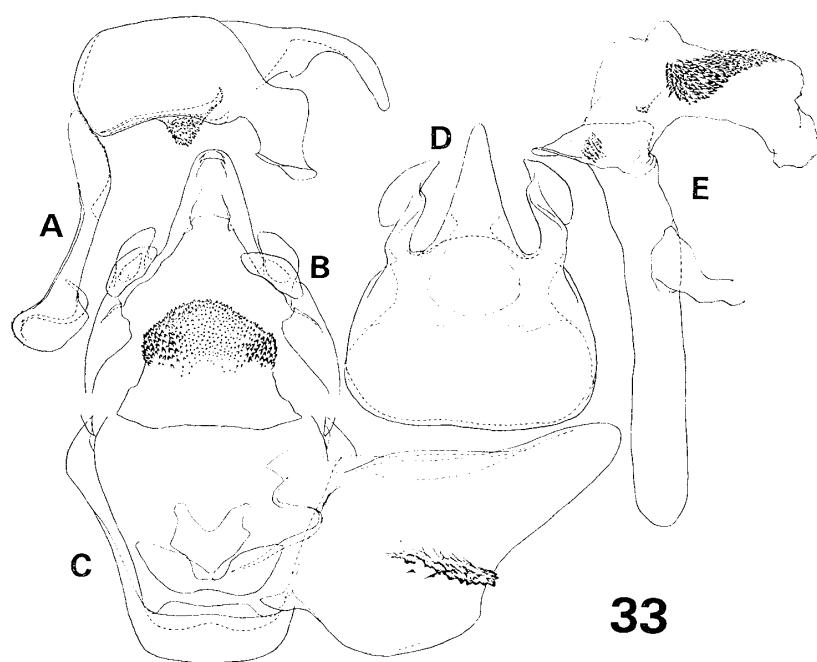
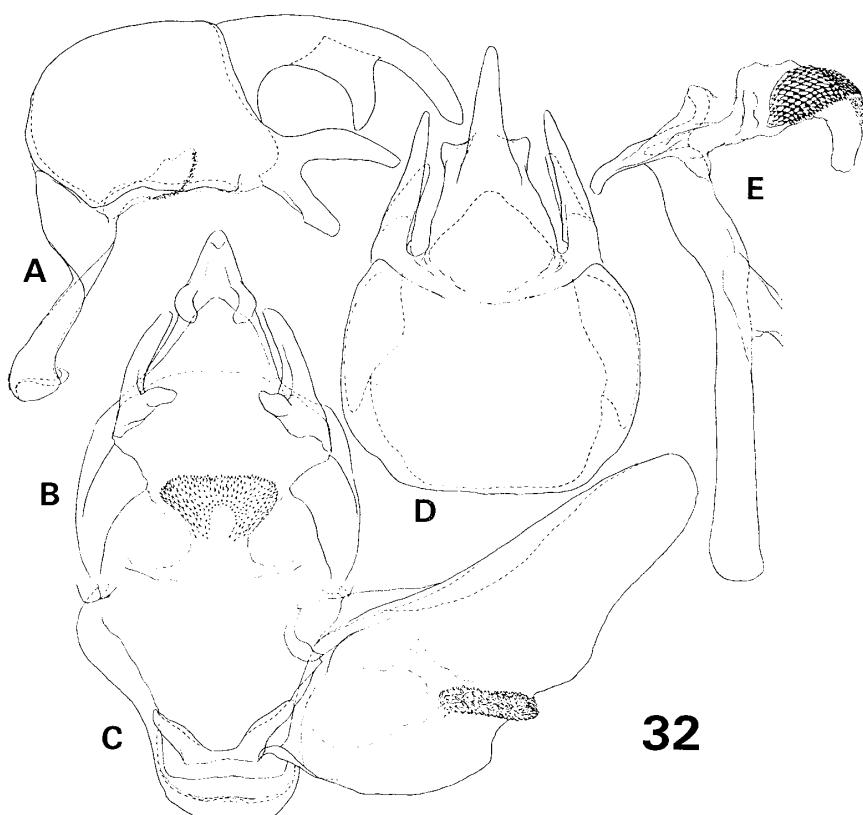
Very variable species and basically separable into four forms as follows:

Form A (Fig. 1): Male only. Forewing uniformly ochreous to fuscous brown, in some specimens with dark fuscous median area; traverse lines obscure in general.

Form B (Fig. 2): Female only. Forewing uniformly dull greyish brown to dark blackish grey; lines obscure.

Form C (*nigrifasciata*-form) (Figs. 3, 20): Both sexes. Forewing blackish brown to grey, heavily frosted with white, with white ante- and postmedian lines; region beyond reniform often tinged with white.

Form D (*dubia*- or *semifascia*-form) (Figs. 4, 5, 19, 22): Both sexes. Forewing chalky white, sometimes sparsely frosted with black; median area blackish wholly or above submedian fold, and sometimes strongly constricted at middle.



Figs. 32–33. Male genitalia of *Epipsestis* spp. 32. *E. perornata* INOUE; 33. *E. dubia* (WARREN).

There are many intermediate specimens between forms A and C, B and C, and/or C and D in both sexes and in all forms, there appear some specimens in which blackish raised-scale tufts of forewing are replaced by yellow, and also many specimens in which scale-tuft at base is edged inside with white. Further, there are some aberrant forms like WARREN's "nigrilineata" (Fig. 23) and a specimen shown in Fig. 6.

Length of forewing: 12–17 mm. (Expanse: 26–36 mm.)

Male genitalia (Fig. 33): Uncus curved ventrad, with paired small processes on ventral rims near base; socius rigid, compressed and raised before middle, with its tip dilated outside; tegumen large, bent ventrally, its posterior margin folded inside below base of socius; anellus with wide bottom, caudal half roundish and protrudent at sides, clothed with minute and stout dents laterally and with minute granules mesally; valva with ventrally curved sacculus, of which dorso-caudal end is raised and set up with minute strong dents; caudal process of aedeagus lobed, laterally curved; vesica with a mass of scaly spines.

Female genitalia (Fig. 43): Papillae anales short and broad, sclerotized regions between them bulbous, becoming thinner posteriorly; ventral membrane of 8th segment posteriorly ridgy, densely pubescent; dorsum strongly and widely protrudent caudally and almost covering papillae anales dorsally, shallowly concave at middle, and invagination of caudal wall wide and deep; lamella antevaginalis ridgy, V-shaped, densely clothed with minute spines; ductus bursae swollen near middle; corpus bursae large and lacking signum.

Type material: Color transparencies examined. ♀, holotype of *dubia* (Fig. 19); ♂, syntype of *nigrifasciata* (Fig. 20); ♂, syntype of *nigrifasciata* ab. *semifascia* (Fig. 22); ♀, holotype of *nigrifasciata* ab. *nigrilineata* (Fig. 23).

Specimens examined: Nepal: —1 ♂, Phakding (2,580 m), Solukhumbu, Sagarmatha, Sept. 29, 1979, M. OWADA leg.; 2 ♂ 1 ♀, Monjo (2,800 m), Solukhumbu, Sagarmatha, Oct. 4, 1979, M. OWADA leg.; 9 ♂ 5 ♀, Poyan (2,780 m), Solukhumbu, Sagarmatha, Oct. 6, 1979, M. OWADA leg.; 7 ♂ 8 ♀, Ringmo (2,780 m), Solukhumbu, Sagarmatha, Oct. 9, 1979, M. OWADA leg.; 31 ♂ 47 ♀, Junbesi (2,670 m), Solukhumbu, Sagarmatha, Oct. 10–11, 1979, M. OWADA leg., Genitalia: HY-Thyat. 64 (♂); 18 ♂ 8 ♀, Sete (2,600 m), Solukhumbu, Sagarmatha, Oct. 12, 1979, M. OWADA leg., Genitalia: HY-Thyat. 62, 63 (♂); 2 ♀, Thodung (3,100 m), Ramechhap, Janakpur Zone, Oct. 14, 1979, M. OWADA leg.; 66 ♂ 69 ♀, Chauki (2,700 m), Terhathum, Kosi Zone, Oct. 30, 1979, M. OWADA leg., Genitalia: HY-Thyat. 61 (♂), 75, 79, 80 (♀); 2 ♂ 1 ♀, Basantpur (2,380 m), Terhathum, Kosi Zone, Oct. 31, 1979, M. OWADA leg.; 4 ♂ 1 ♀, Dolangsa (2,600 m), Sindhu, Bagmati Zone, Nov. 11, 1979, M. OWADA leg.; 4 ♂ 3 ♀, Magarka Danda (3,310 m), nr. Tinsang La, Dolakha, Janakpur Zone, Nov. 12, 1979, M. OWADA leg., Genitalia: HY-Thyat. 76 (♀); 1 ♀, Drumthali (2,420 m), Sindhu, Bagmati Zone, Nov. 13, 1979, M. OWADA leg. All these specimens are in the National Science Museum (Nat. Hist.), Tokyo.

Distribution: W. India (Handar), Sikkim, and Nepal (Sagarmatha, Janakpur, Bagmati, Kosi).

Remarks: This species was first described by WARREN on the basis of a single female, but WARREN himself stated in his original description of *Polyptychus albidisca*, described in the preceding lines, that "although the markings are so different, I think

it not impossible that a longer series of the species will show that this insect [*P. albidisca*], and another, which I describe as *P. dubia* are one and the same," and HAMPSON (1892) treated *dubia* as a junior synonym of *P. albidisca* WARREN, 1888. WARREN (1915) later described *P. nigrifasciata* based upon a longer series of specimens (4 ♂ 4 ♀), recognized that *nigrifasciata* was a variable species and described two aberrant forms, but unfortunately he was not aware of the fact that his *dubia* is a good species synonymous with *nigrifasciata*, perhaps because of his first consideration and HAMPSON's subsequent treatment. Transparencies of the type-specimens of both the moths sent to me by Mr. M. R. HONEY of British Museum (Natural History) showed their conspecificity clearly.

***Epipsestis albidisca* (WARREN, 1888), comb. nov.**
(Figs. 7-9, 21, 24, 27)

Polyploca albidisca WARREN, 1888, Proc. zool. Soc. Lond., **1888**: 299; BUTLER, 1889, Illust. typic. Specimens Colln. Brit. Mus., 7: 49, pl. 126, fig. 3; HAMPSON, 1892, Fauna Brit. India, Moths, 1: 183; DALLA TORRE, 1921, in JUNK, Lepid. Cat., (25): 25; GAEDE, 1930, in SEITZ, Gross-Schmett. Erde, **10**: 662.

Palimpsestis albidisca MOORE, 1888, Proc. zool. Soc. Lond., **1888**: 408.

Palimpsestis albidisca: WARREN, 1912, in SEITZ, Gross-Schmett. Erde, **2**: 328, pl. 49, line i.

Cymatophora albidisca: DALLA TORRE, 1921, in JUNK, Lepid. Cat., (25): 13; HOULBERT, 1921, in OBERTHÜR, Études Lépid. comp., **18**(2): 186.

Polyploca polychromata HAMPSON, 1896, Fauna Brit. India, Moths, 4: 463; DALLA TORRE, 1921, in JUNK, Lepid. Cat., (25): 30; GAEDE, 1930, in SEITZ, Gross-Schmett. Erde, **10**: 662, *syn. nov.*

Similar to *E. dubia* (WARREN) and also variable.

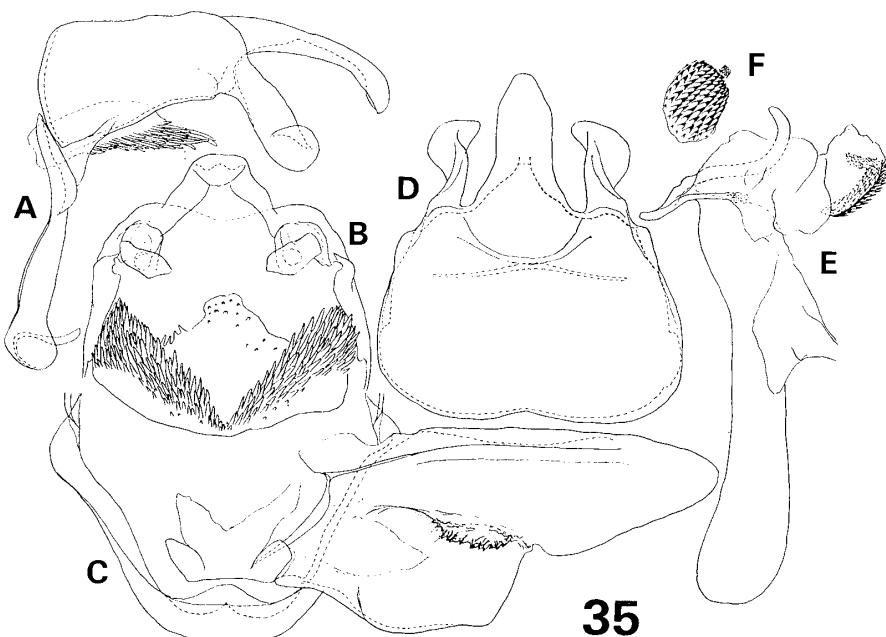
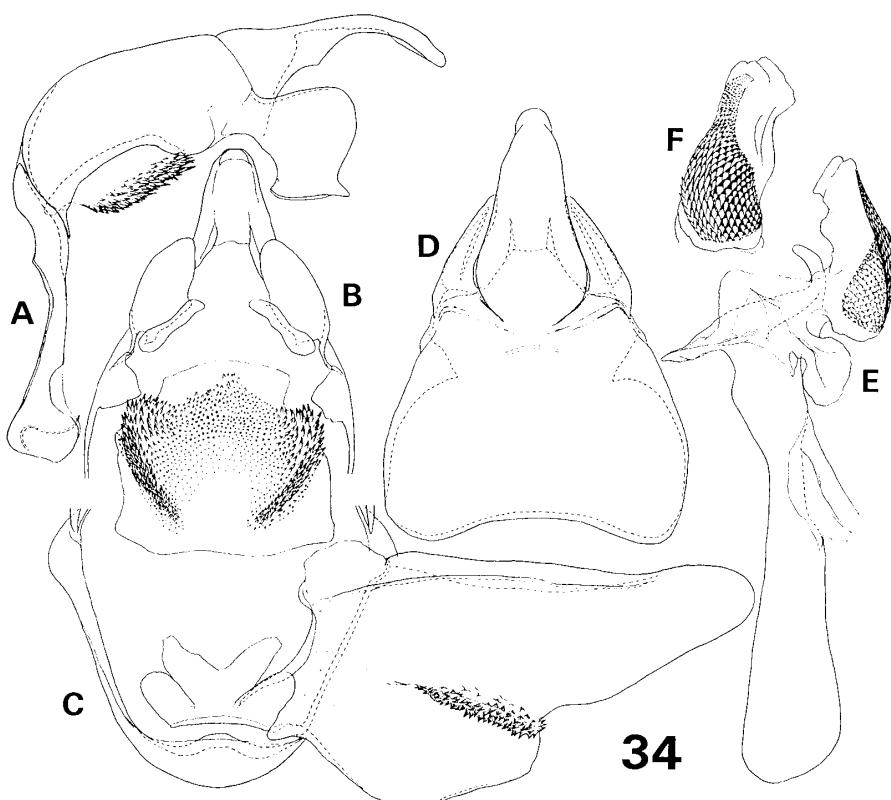
Length of forewing: 15-17 mm. (Expanse: 32-36 mm.)

Male genitalia (Fig. 34): Uncus curved before tip, with small swellings on base of ventral rims; socius flattened, broadened and highly raised at middle, somewhat dilated outside and pointed inside at tip; tegumen large, with its posterior margin folded inwards below base of socius; anellus rectangular, elevated in oblique arc form latero-caudal angle to above bottom, with strong minute dents on and along elevated areas and clothed with granules on caudal half; valva with sacculus ventrally arched and its dorso-caudal end weakly raised by series of minute dents; aedeagus slightly curved, caudal process disk-like and curved laterally; vesica with a mass of minute scale-like spines.

Female genitalia (Fig. 44): Papillae anales long, with sclerotized regions between them swollen outside at base, becoming slenderer toward tip; ventral membrane of 8th segment ridgy, heavily sclerotized and clothed with minute spines; dorsum anteriorly bent, with posterior margin protrudent at middle and caudal wall deeply invaginated; lamella antevaginalis ridgy, clothed with minute spines; corpus bursae with weakly sclerotized and granulated signum, which is indistinctly interrupted.

Type material: Color transparencies examined. ♀, holotype of *albidisca* (Fig. 21); ♀, holotype of *polychromata* (Fig. 24).

Specimens examined: Nepal: —1 ♂, Manidingma (2,240 m), Solukhumbu, Sagarmatha, Oct. 8, 1979, M. OWADA leg.; 3 ♂ 1 ♀, Thodung (3,100 m), Ramechhap, Janakpur Zone, Oct. 14, 1979, M. OWADA leg.; 1 ♀, Kabre (1,760 m), Dolakha,



Figs. 34-35. Male genitalia of *Epipsestis* spp. 34. *E. albidisca* (WARREN); 35. *E. bilineata* (WARREN).

Janakpur Zone, Oct. 17, 1979, M. OWADA leg.; 3♂ 6♀, Chauki (2,700 m), Terhathum, Kosi Zone, Oct. 30, 1979, M. OWADA leg., Genitalia: HY-Thyat. 67 (♂), 78 (♀); 1♀, Gunrase (2,300 m), Dhankuta, Kosi Zone, Nov. 1, 1979, M. OWADA leg.; 1♀, Dolangsa (2,600 m), Sindhu, Bagmati Zone, Nov. 11, 1979, M. OWADA leg.;

1♂, Magarka Danda (3,310 m), nr. Tinsang La, Dolakha, Janakpur Zone, Nov. 12, 1979, M. OWADA leg.; 1♂ 1♀, Drumthali (2,420 m), Sindh, Bagmati Zone, Nov. 13, 1979, M. OWADA leg. All these specimens are preserved in the National Science Museum (Nat. Hist.), Tokyo.

Distribution: W. India (Berham Gully, Kangra), Sikkim, and Nepal (Sagarmatha, Janakpur, Bagmati, Kosi).

Remarks: This species is easily distinguished from *E. dubia* (WARREN) by broadened outer margin, an oblique blackish shade from apex to vein 3, which continues to the posterior half of postmedian line, and a whitish marking at middle above hind margin in forewing. Usual form of this species has dark blackish grey ground color, complicatedly tinged with ochreous or sparsely frosted with white. The type-specimen of WARREN's *albidisca* is rather a rare form, and has a broad and distinct whitish median area in forewing. On the other hand, HAMPSON's *polychromata*, appearing in female only, is an extreme form having yellow raised scales at base and a broad yellow stria along vein 2 in forewing, but the appearance of yellow scales varies from specimen to specimen. WARREN found out that *polychromata* was a variable species and used his manuscript name "ochracea" for an aberrant form of *polychromata* (Fig. 27) in his 1915 paper (p. 159), though he failed to reveal the identity of *albidisca* with *polychromata*.

***Epipsestis bilineata* (WARREN, 1915), comb. nov.
(Figs. 10–12, 25, 26)**

Polyploca bilineata WARREN, 1915, Novit. zool., 22: 159.

Polyploca acutangula WARREN, 1915, Novit. zool., 22: 159, syn. nov.

Strikingly dimorphic species, with narrower forewing.

Length of forewing: 14–16 mm. (Expanse: 30–34 mm.)

Male genitalia (Fig. 35): Uncus gently curved; socius with its tip triangularly dilated outside; tegumen broad, with its posterior margin weakly folded inside; anellus large, caudally protrudent at sides with V-shaped high elevation clothed with long spines from protrudent tips to middle of bottom, with caudal margin protruded, sparsely clothed with minute spines and granules; valva with raised lobe of dents at dorso-caudal end of sacculus; aedeagus with a thinned and curved caudal process; vesica bearing a batch of minute scaly spines.

Female genitalia (Fig. 45): Papillae anales with sclerotized regions between swollen outsides at bases; ventral membrane of 8th segment heavily clothed with minute spines, ridgy posteriorly and laterally; dorsum narrow, its posterior margin protrudent at middle, with caudal wall widely and deeply invaginated; lamella antevaginalis of a narrow ridge; corpus bursae large, signum ovate, with a mass of minute granular dents.

Type material: Color transparencies examined. ♂, holotype of *bilineata* (Fig. 25); ♀, holotype of *acutangula* (Fig. 26).

Specimens examined: Nepal: —2♂, Chauki (2,700 m), Terhathum, Kosi Zone, Oct. 30, 1979, M. OWADA leg., Genitalia: HY-Thyat. 68; 1♂ 2♀, Dolangsa (2,600 m), Sidhu, Bagmati Zone, Nov. 11, 1979, M. OWADA leg., Genitalia: HY-Thyat. 74

(♀ of *acutangula* form); 1 ♂, Palati (1,200 m), Sindhu, Bagmati Zone, Nov. 14, 1979, M. OWADA leg.

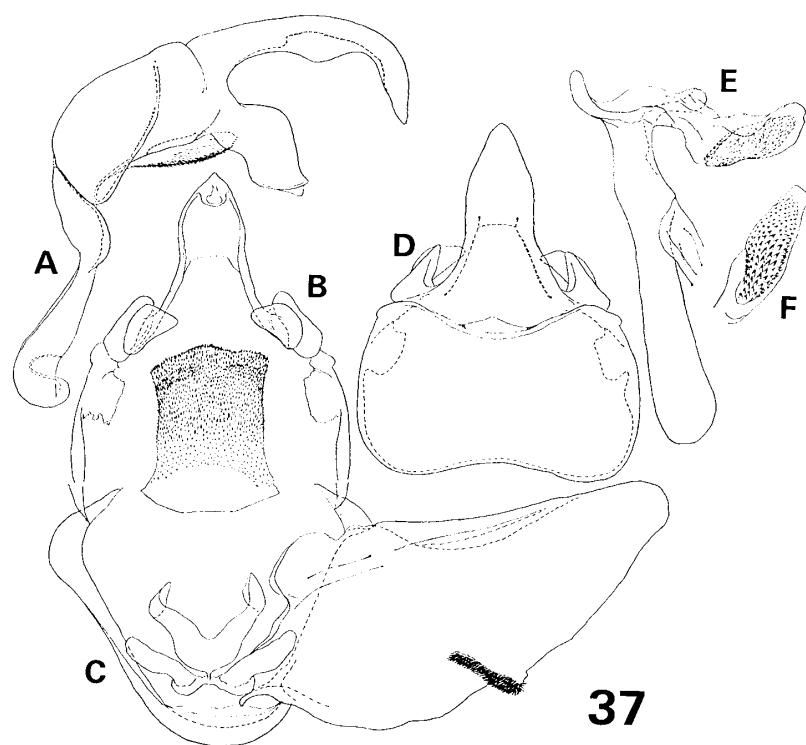
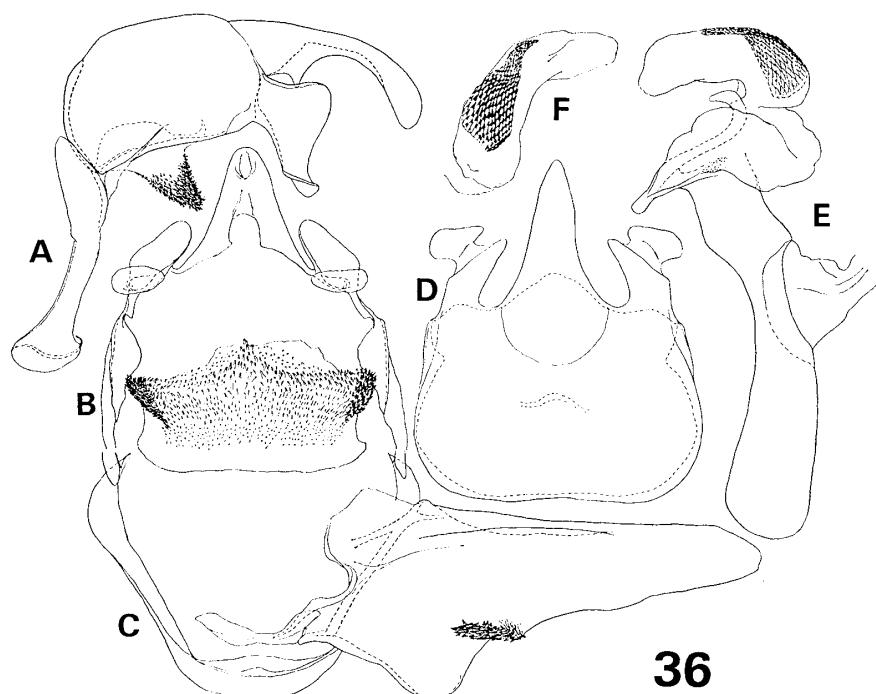
Distribution: Sikkim (Darjeeling) and Nepal (Bagmati, Kosi).

Remarks: WARREN (1915) described this species based on a single male and at the same time he described *P. acutangula* based on a single female. Mr. M. R. HONEY kindly made a comparative study of a sketch of the male genitalia of our specimen of *acutangula* with the genitalic slide of the holotype of *bilineata*, and confirmed the identity of the two forms. Since the former is originally represented by only a single female, I am going to sink into a junior synonym of the latter, which was described on a male taxonomically more important than female. WARREN noted in the original description of *acutangula* that the type-specimen was captured in August, but this may be a labeling error.

Epipsestis longipennis sp. nov. (Fig. 13)

Palpus with second segment fuscous above, pale ochreous with some blackish scales laterally, densely fringed below with long ochreous hairs with somewhat pinkish tint, third segment fuscous tinged with ocher; frontal tufts pale ochreous, those on vertex tipped with blackish scales; patagia pinkish or pale yellowish ochreous, with a fuscous marginal band; tegula pale pinkish grey to yellowish ochreous, with its frontal edge blackish fuscous, scattered with a few blackish scaly hairs; abdomen pale brownish grey above and laterally, pale ochreous yellow beneath and at tip.

Forewing pale grey, with pinkish suffusion except on median and subterminal areas; a fine black point near base of cellule 1; subbasal line blackish, excurred and serrate from costa to median fold, then obsolete, leaving black points on vein 1 and hind margin; antemedian line double, with an obsolete median line, filled in with dark pinkish grey, inner line serrate, strongly incurved in cellule 1, outer line also serrate, but often obsolete; two black points of raised scales in cell beyond outer line of double antemedian lines; median area tinged with white costally; median line thin, black, oblique and serrate from costa, angulate outwards near discocellulars, then again serrate below vein 2 to hind margin; a minute raised-scale tuft on discocellulars, blackish at tip; postmedian line double, fuscous black, often obsolete excepting costal and hind marginal shades, leaving blackish tinge on veins, excurred from subcosta to vein 2; a black serrate line beyond postmedian line, sometimes accompanying an obsolete line inside below vein 3; subterminal line black, waved, edged inside with pale grey and shaded further inside with fuscous below vein 2; an oblique black stria from apex concave, continuing to subterminal line at vein 6; terminal line formed by a series of black semicircular lunules between veins; cilia pinkish pale grey, with yellowish broad basal line and dark greyish mesal and distal lines, black points on dark mesal line beyond veins. Hindwing pale ochreous grey, with an obsolete outer line; cilia pale yellowish ochreous at base and paler greyish at tip, with dark mesal line. Underside: —Forewing pale yellowish grey, with costa paler; two dark greyish shades on costa at middle, from which obsolete median lines sometimes arise to below cell; an arched outer line from subcosta, widened between veins 5 to 3, then narrowed and disappearing below median fold; four blackish points on costa beyond the outer line;



Figs. 36-37. Male genitalia of *Epipsestis* spp. 36. *E. longipennis* sp. nov.; 37. *E. medialis* sp. nov.

cilia as on upperside. Hindwing paler yellowish grey, with obsolete median and outer lines, the latter thin; cilia concolorous, with black points at middle beyond veins.

Length of forewing: 15-19 mm. (Expanse: 29-40 mm.)

Male genitalia (Fig. 36): Uncus rather short, strongly bent ventrad, with small

prominences from near base of ventral rims; socius highly raised at middle, then descending ventrally, with tip more or less dilated outside and pointed inside; tegumen broad, posterior margin weakly folded inside; anellus extremely wide, strongly protrudent caudally at sides, clothed with minute spines, especially densely on protruded areas; valva markedly narrow, sacculus short with strongly protruded ventral margin, its dorso-caudal margin raised and clothed with minute denticles; aedeagus slightly curved, caudal process narrow and laterally curved; vesica with a batch of minute scale-like spines.

Female genitalia (Fig. 46): Papillae anales roundish, triangularly sclerotized regions between them large, widened at base; ventral membrane of 8th segment weakly sclerotized, clothed with minute spines; dorsum protrudent posteriorly and shallowly concave at middle, caudal wall widely invaginated; lamella antevaginalis ridgy, spinulate; signum small, weakly sclerotized.

Holotype. ♂, labeled "E NEPAL/Janakpur Zone/Dolakha/Magarka Danda/3,310 m/(Nr. Tinsang La)/12. XI. 1979/M. OWADA," preserved in the National Science Museum (Nat. Hist.), Tokyo.

Paratypes. Nepal: —6 ♂ 3 ♀, same data as holotype, Genitalia: HY-Thyat. 69 (♂), 81 (♀), preserved in the National Science Museum (Nat. Hist.), Tokyo.

Distribution: Nepal (Janakpur).

Remarks: This new species somewhat resembles *Polyploca griseata* WARREN, 1915 (Fig. 29), ?= *P. bifasciata* HAMPSON, 1896 (Fig. 28), in size and coloration, but is easily separable from the latter two by the shape of ante- and postmedian lines and by having a serrate line beyond postmedian line and also serrate subterminal line.

Epipsestis medialis sp. nov. (Figs. 14, 15)

Palpus blackish laterally, its second segment densely clothed with pale ochreous hairs below and inside, mixed with a few blackish ones; frontal tuft pale ochreous, tipped with black; vertex pale ochreous, with tufts tipped with black; patagia reddish brown, sparsely admixed with black; tegula pale whitish grey, intermixed with blackish grey mainly near posterior end; abdomen pale ochreous.

Foreswing pale grey, with its median area dark blackish grey; a blackish scale-tuft on base of cellule 1; antemedian line white, wide, thinly edged with black inside and thickly outside, excurred from costa to cellule 1, then oblique outside to hind margin; a thin black line beyond antemedian line; a black bar of raised scales in cell and a longer black bar of raised scales at discocellulars; three median lines between them, innermost weak, apart from the rest at costa, outer two parallel to each other, minutely waved, outermost running through discocellulars; postmedian line obsolete, white, starting from a costal white shade, oblique to cellule 4, then minutely serrate and vertical to hind margin, outwardly edged with a thin serrate black line from cellule 4 to hind margin; subterminal line white, sinuous, oblique from costa to cellule 5, then vertical to hind margin, shaded inside with blackish grey in cellules 5 and 4, on subcosta, and below vein 2; a black streak from apex, slightly curved, touching subterminal line and merging it outside in cellule 5; terminal line formed by a series of thin lunes; cilia whitish with dark mesal line across it, rayed with black beyond each

vein. Hindwing pale whitish grey, with cilia whitish grey and checkered with black. Underside: —Forewing pale ochreous grey, tinged darker in cell; blackish shades on subcosta above discal vein and four black points on costa beyond them; an oblique black streak from apex to vein 7. Hindwing uniformly pale ochreous grey, with an indistinct discocellular bar. Cilia of both wings as above.

Length of forewing: 16–18 mm. (Expanse: 34–37 mm.)

Male genitalia (Fig. 37): Uncus strongly bent ventrally, with ventral rims gently swollen before middle; socius stout, flattened, raised at middle and triangularly dilated at tip; fenestrula present; tegumen wide dorsally, posterior margin folded inwards below base of socius; anellus oblong, with its bottom slightly arched, densely clothed with minute hairy spines; valva with its ventral margin gently curved, sacculus raised and clothed with minute spines at dorso-caudal end; aedeagus with a curved caudal process; vesica with a batch of minute scaly spines.

Female genitalia (Fig. 47): Papillae anales with ventral membrane weakly sclerotized between them; ventral surface of 8th segment also weak, its dorsum narrow, with posterior margin not protruded, invagination of caudal wall shallow; lamella antevaginalis wide, weakly sclerotized; corpus bursae relatively small, signum of an indistinct and weak patch.

Holotype. ♂, labeled "Junbesi 2,670 m/Solukhumbu/Sagarmatha/E NEPAL/10–11. X. 1979/M. OWADA," preserved in the National Science Museum (Nat. Hist.), Tokyo.

Paratypes. Nepal: —8♂ 2♀, same data as holotype, Genitalia: HY-Thyat. 65 (♂), 82 (♀); 4♂ 2♀, Phakding (2,580 m), Solukhumbu, Sagarmatha, Sept. 29, 1979, M. OWADA leg.; 3♂ 1♀, Namche Bazar (3,440 m), Solukhumbu, Sagarmatha, Sept. 30, 1979, M. OWADA leg.; 27♂ 21♀, Thame Og (3,800 m), Solukhumbu, Sagarmatha, Oct. 1–2, 1979, M. OWADA leg., Genitalia: HY-Thyat. 66 (♂), 77 (♀); 3♂, Monjo (2,800 m), Solukhumbu, Sagarmatha, Oct. 4, 1979, M. OWADA leg.; 1♂ 1♀, Ringmo (2,780 m), Solukhumbu, Sagarmatha, Oct. 5, 1979, M. OWADA leg.; 1♂, Kharikhola (1,980 m), Solukhumbu, Sagarmatha, Oct. 7, 1979, M. OWADA leg.; 2♀, Manidingma (2,240 m), Solukhumbu, Sagarmatha, Oct. 8, 1979, M. OWADA leg. Preserved in the National Science Museum (Nat. Hist.), Tokyo.

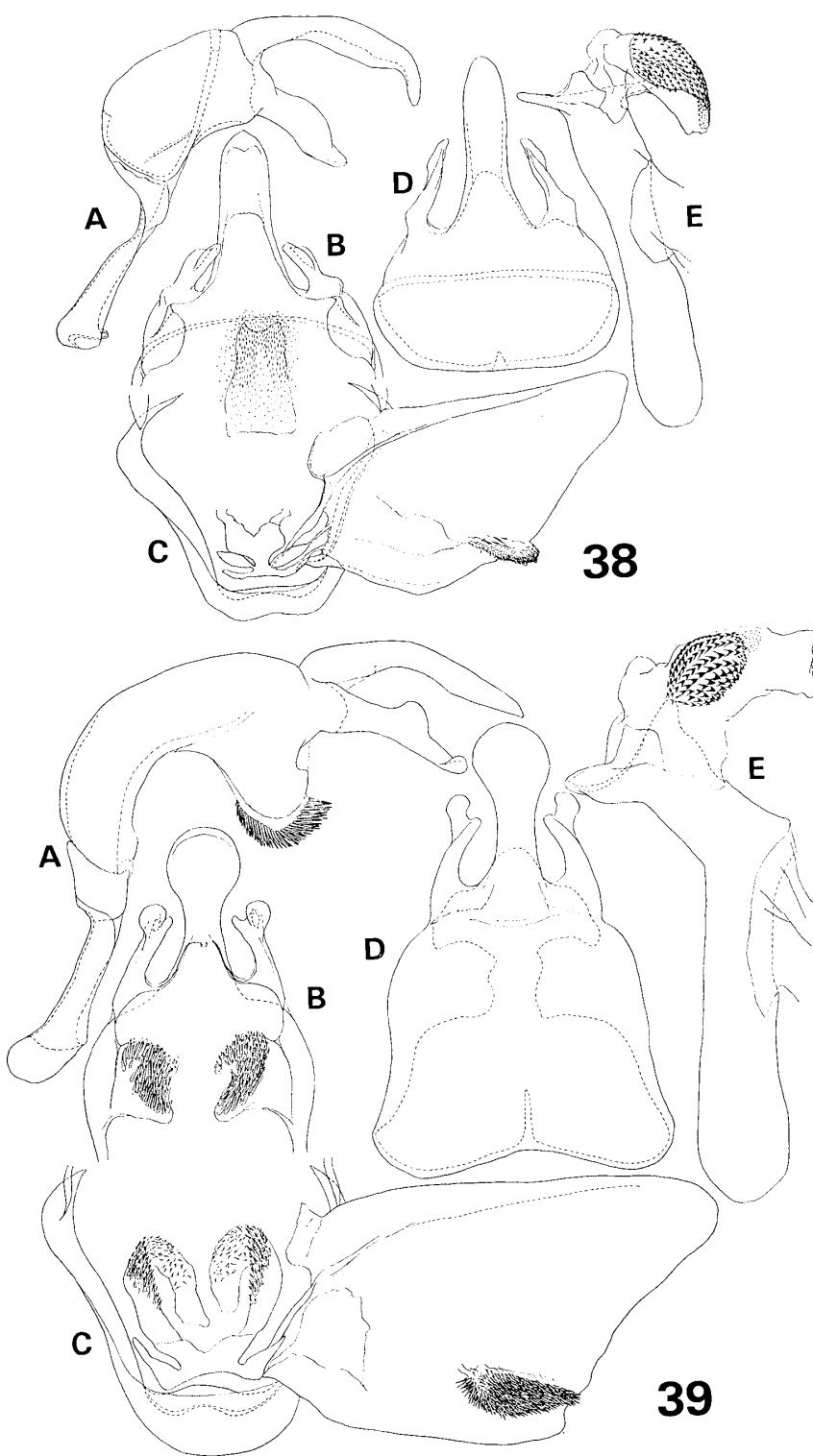
Distribution: Nepal (Sagarmatha).

Remarks: This new species shows only slight individual variation, but in some specimens the raised-scale tufts of forewing are all represented by dark yellow.

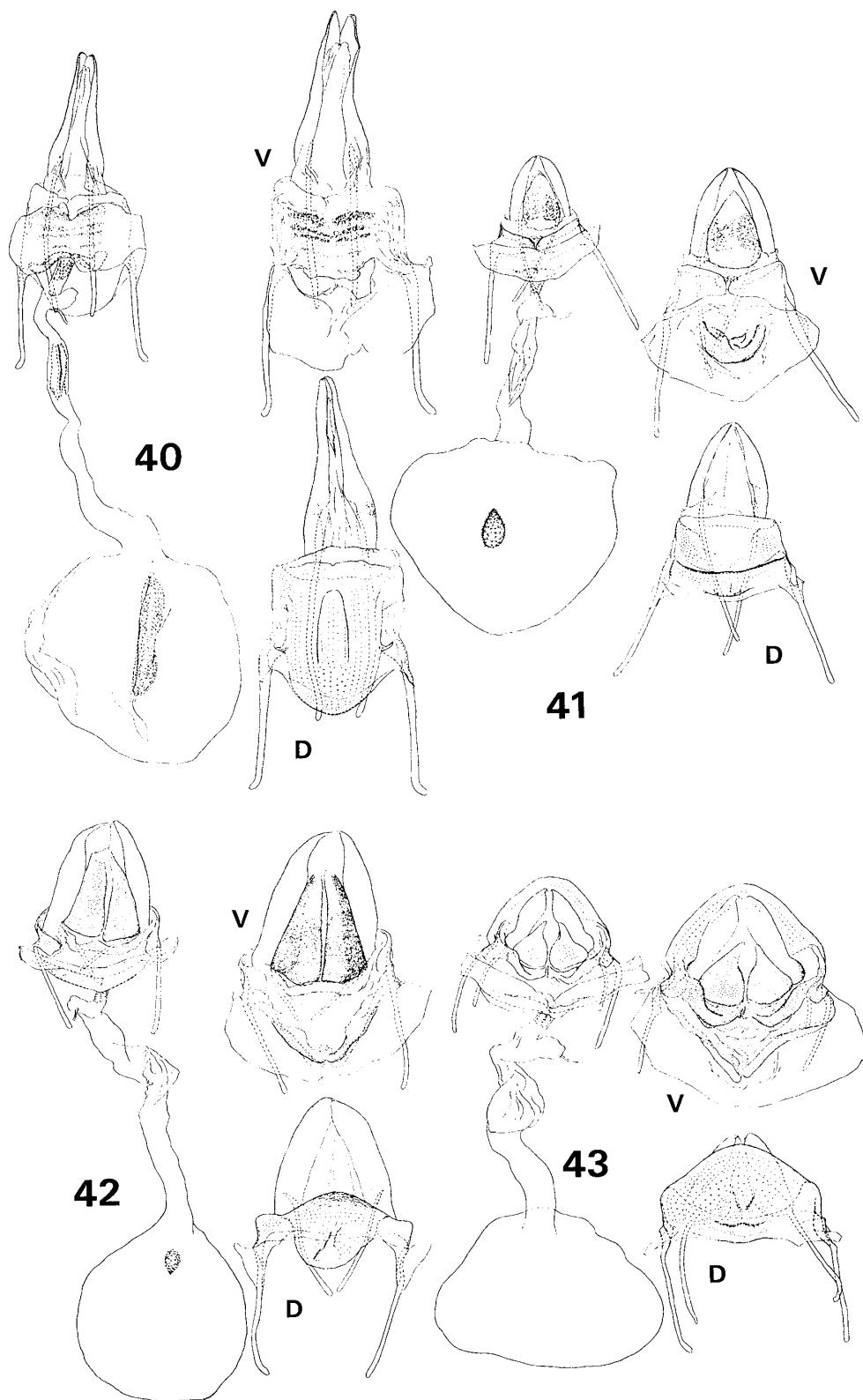
Epipsestis mediofusca sp. nov. (Fig. 16)

♂. Palpus with second segment blackish grey laterally, sparsely mixed with pale greyish hairs, fringed below with pale grey basally and with black apically, third segment dark grey; frontal tuft of greyish straw-color, mixed with blackish hairs, tufts on vertex pale ochreous, tipped with black; patagia ochreous grey, scattered with dark brown hairs; tegula pale ochreous grey, with frontal edge darkened and densely mixed with blackish hairs; abdomen dark brownish grey above, pale brown beneath, with tip paler ochreous.

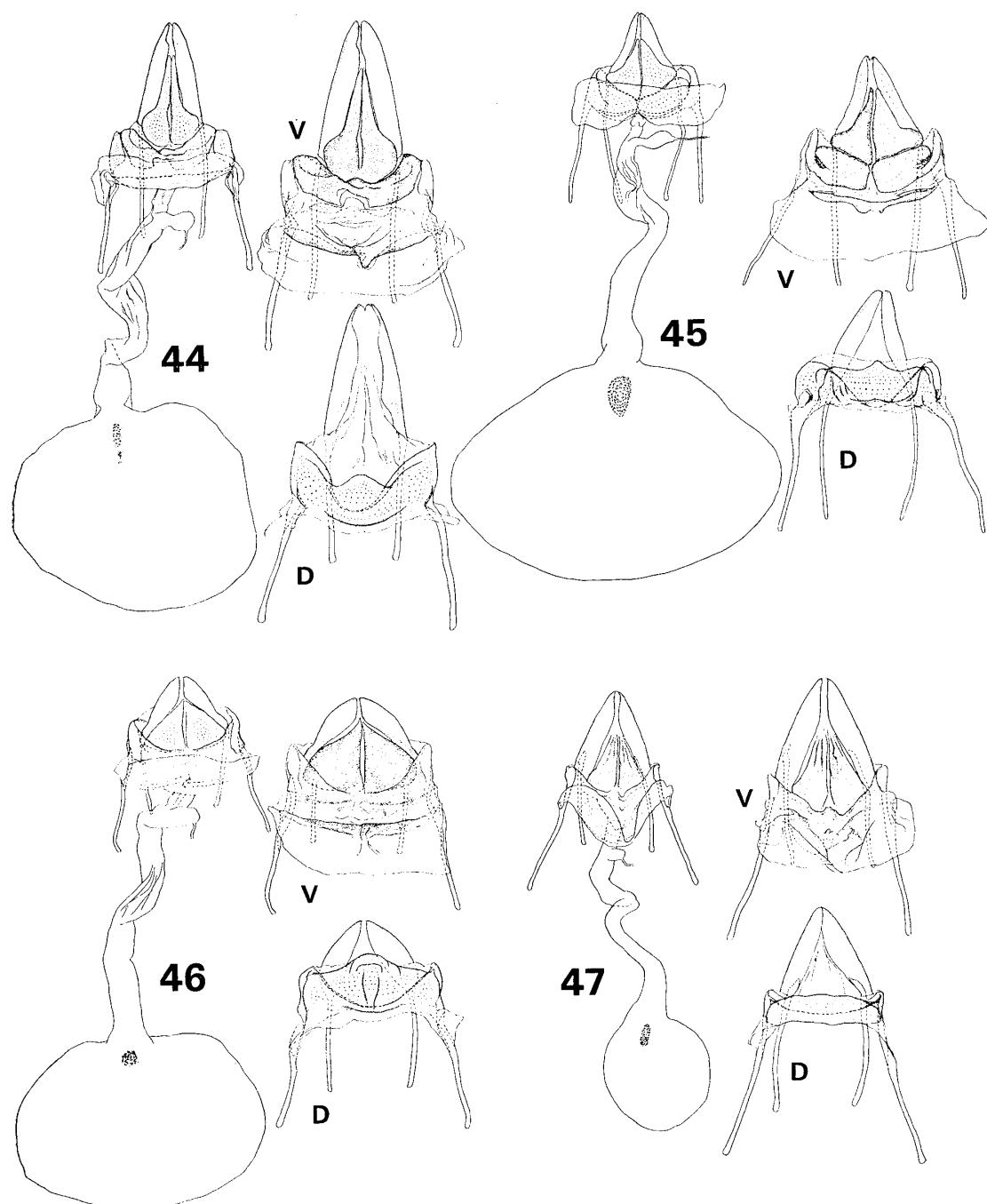
Forewing pale greyish ochreous, tinged with dark fuscous brown on median area



Figs. 38-39. Male genitalia of *Epipsestis* spp. 38. *E. mediofusca* sp. nov.; 39. *E. renalis* (MOORE).



Figs. 40-43. Female genitalia of *Epipsestis* spp. 40. *E. ornata* (LEECH); 41. *E. nikkoensis* (MATSUMURA), Nepal; 42. *E. perornata* INOUE; 43. *E. dubia* (WARREN). (V: ventral view of genital segment, D: dorsal view of genital segment.)



Figs. 44-47. Female genitalia of *Episestis* spp. 44. *E. albidisca* (WARREN); 45. *E. bilineata* (WARREN); 46. *E. longipennis* sp. nov.; 47. *E. medialis* sp. nov.

and with dark greyish ocher beyond postmedian line; a minute blackish point near base of cellule 1; antemedian line thick, blackish, oblique from costa to median fold, then vertical to hind margin, widely edged inside with white; a blackish arched line beyond antemedian line; median line dark, ill-defined; reniform represented by two black bars on double postmedian line, which start from thick oblique and blackish costal bars; subterminal area grey with ochreous suffusion, inwardly defined by a blackish sinuous line; subterminal line obsolete, thick, weakly waved, ending in tornus; an oblique and weakly waved black bar from apex to vein 6; terminal line thin, black, festooned between veins; cilia ochreous grey, dark at apex, with pale basal line, blackish beyond veins. Hindwing dark fuscous grey, with basal half slightly paler; cilia dark fuscous grey, with pale ochreous basal line across it. Underside: —Forewing dark ochreous grey, with a slightly paler band beyond cell, with posterior area below median nervure paler; an ill-defined black bar on costa at apical one-fourth, three black points beyond it, apex tinged with black. Hindwing dark ochreous grey, paler in basal two-thirds, especially below cell to anal angle; cilia of both wings almost the same as above.

Length of forewing: 15 mm. (Expanse: 31 mm.)

Male genitalia (Fig. 38): Uncus acutely bent ventrally at tip; socius flattened, not so wide, with apical dilatation weakened; tegumen broad, its posterior margin folded inside; anellus weakly sclerotized rectangularly, clothed with minute hairy spines; valva relatively short, sacculus arched below with raised caudal end, which is densely clothed with minute hairy spines; aedeagus with a caudal process slightly curved laterally; vesica with a batch of minute scale-like spines.

Holotype. ♂, labeled "Poyan 2,780 m/Solukhumbu/Sagarmatha/6-X-1979/M. OWADA," Genitalia: HY-Thyat. 71, preserved in the National Science Museum (Nat. Hist.), Tokyo.

Distribution: Nepal (Sagarmatha).

Remarks: This new species is considered to be most related to the preceding new species, *E. medialis*, in view of male genitalia: weakly sclerotized anellus clothed with micro spines, and the structure of dorso-caudal end of sacculus of valva.

Epipsestis renalis (MOORE, 1888), comb. nov. (Fig. 18)

Palimpsestis renalis MOORE, 1888, Proc. zool. Soc. Lond., **1888**: 407; WARREN, 1912, in SEITZ, Gross-Schmett. Erde, **2**: 328, pl. 49, line i; GAEDE, 1930, in SEITZ, Gross-Schmett. Erde, **10**: 661.

Polyploca renalis: BUTLER, 1889, Illust. typic. Specimene Colln. Brit. Mus., **7**: 49, pl. 126, fig. 4; HAMPSON, 1892, Fauna Brit. India, Moths, **1**: 183.

Cymatophora renalis: DALLA TORRE, 1921, in JUNK, Lepid. Cat., (25): 24; HOULBERT, 1921, in OBERTHÜR, Études Lépid. comp., **18**(2): 182.

Length of forewing: 15 mm.

Male genitalia (Fig. 39): Uncus spatulate, ventrally curved; socius with its dorsal margin highly raised at middle, tip blunt and roundish; tegumen curved ventrad, rather narrow laterally, dorsal half of its posterior margin strongly protrudent caudally and supporting anal membrane, bearing numerous long spines; valva wide, sacculus well developed, raised at dorso-caudal end with a number of stout spines; juxta with long and spinulated sclerites caudally; aedeagus strongly angulate, with caudal process broadened and dish-like; vesica bearing a batch of minute and stout spines.

Specimen examined: Nepal: —1 ♂, Gunrase (2,300 m), Dhankuta, Kosi Zone, Nov. 1, 1979, M. OWADA leg., Genitalia: HY-Thyat. 70.

Distribution: W. India (Kangra, Dharamsala) and Nepal (Kosi).

Remarks: This species is very peculiar in *Epipsestis* in the structure of male genitalia, that is, spatulate uncus, developed posterior margin of tegumen with spines, membranous anellus, and strongly angulated aedeagus. However I prefer to place it in this genus for the time being. Its exact status within the family will be clarified by an examination of the female genitalia.

Acknowledgment: I wish to express my sincere thanks to Mr. M. OWADA, National Science Museum (Nat. Hist.), Tokyo, for his kind permission to examine invaluable material from Nepal. I am much indebted to Messrs. A. H. HAYES and M. R. HONEY, British Museum (Natural History), London, for their kindness in sending me many fine color transparencies of the type-specimens preserved in their museum and for their kind help in comparing the genitalic slides of our material with those of the type. My deep appreciation is also due to Dr. H. INOUE, Otsuma Woman's University, Saitama, for his kindness in giving me invaluable advice and in reading through the manuscript.

摘要

属 *Epipsestis* MATSUMURA は、これまで日本産の3種に対して用いられていたが、今回、1979年秋の国立科学博物館ネパール遠征隊によってもたらされた同地域の多数の標本を検討した結果、今まで属 *Polyploca* のもとに記載されたまま検討されなかった数種に対しても属 *Epipsestis* が当てはまることが判った。本報では、ネパール産の3新種および日本の3種を含む10種をもとにこの属の再記載をした。なお、*E. nikkoensis* MATSUMURA ニッコウトガリバをネパールから記録したが、これは本種の海外初の記録である。